

plants unknown to me - and a species of rose which is very frequent, and was in fruit when observed. The bright red berries of the Shepherdia and scarlet hips of the rose - contrast charmingly with the silvery leaves of the former plant. Among the smaller plants, a species of umbellifer is very common on the Yonkee; - *Nicotiana glauca* occurs - and an *artemisia* is frequent from the fibres of which the Putes make their bow-strings. Trees are not seen on the Humboldt as far as explored, unless - perhaps - the low willows may be so denominated. The *Shepherdia* is frequent. The meadow plants in the vicinity of either stream - are of much the most interest, including many species of grasses - canes - and juncos. The most showy flower of these meadows, is a large *Helianthus* (seeds of which I procured) which covers extensive fields - and in despite of its beauty, is a troublesome and widely spreading weed. The Indians use its seeds for food. At Glendale on the Yonkee - there are extensive meadows in cultivation, which produce large amounts of hay - barley - and garden vegetables. The "timothy" grass has been introduced into these meadows to some extent. Where ever the *artemisia* attains a more than common height - and the fact is true of the whole country, where it appears most to flourish, the soil is said to be available for the production of crops - if properly irrigated. These rich meadows occur throughout the length of the Yonkee, although

Bailey

U. S. Geological Expl. 40<sup>th</sup> Parallel.

Carson City, Nevada, Dec' 15<sup>th</sup> / 867.

Dear Doctor,

Now that I have settled down in winter quarters, I will give you an account of my summer's work. It was much interrupted by sickness - chiefly fever and ague from which nearly an whole party suffered. The pain is too recent - and my recollection of it too vivid - for me to speak much of it now. Luckily - my associate in this department - Mr Watson - was well all the time - very energetic and industrious - and his herbarium probably contains twice the number which I have collected. I cannot speak in terms of too high praise of this gentleman - always genial and kind - and ever persevering. His botanical work was in addition to that of topography. He works early and late and seems never tired or suffled. For writing my report - which is a separate document from the above named gentleman's, I have divided the flora into sections which are in a measure natural - but partly arbitrary and adopted for convenience in reference. They are as follows.

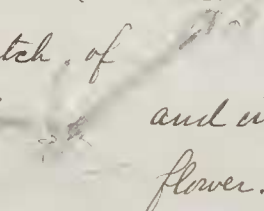
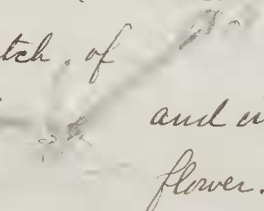
1<sup>st</sup> - The plants found on river bottoms, and margins of

sloughs; the latter generally leading from a river  
a lake and serving for irrigation.

2<sup>d</sup>. Those found on the desert plains or valleys at a  
distance from water.

3<sup>d</sup>. Those of the mountains. These main divisions, I have  
again subdivided into, 1<sup>st</sup> A river section containing the  
Cemna, Potamogeton &c, 2<sup>d</sup> A marginal section immedi-  
ately contiguous to the rivers and lakes, 3<sup>d</sup> A meadow  
tract, watered generally by artificial irrigation, or  
by streams descending from the higher ground, and  
more or less dry in the summer months, 4<sup>th</sup> A desert sec-  
tion proper - and 5<sup>th</sup> one more particularly appertaining  
to the alkali flats and vicinity of salt springs, 6<sup>th</sup> The  
flora of the mountains is divided naturally into two  
distinct sections, according as the plants grow in the  
cañons in the vicinity of water, or - 7<sup>th</sup> flourish on the  
higher and more exposed regions, where in the summer  
season they obtain very little moisture. These divisions  
as before stated, are, in a measure, arbitrary and shade  
into each other. The summer's work began at Hunter's  
Station on the Truckee - and the examination was ex-  
tended from that place to the Big Bend of the river; in  
the mountains about Camp 12 - situated at that place,

and from thence - up the valley of the Humboldt to  
Oreana. Leaving the latter place - a camp was establish-  
ed for sanitary reasons - in Wright's cañon in the West  
Humboldt Range - and afterwards during nearly two  
months stay at Unionville - the opposite side of the same  
range was explored. Beginning with the flora of the  
river bottoms - it is quite evident that some of the plants  
immediately bordering the rivers and streams - have  
been drifted above with soil removed by erosion - the origi-  
nal habitat of some of those found on the Truckee - hav-  
ing probably been near the sources of the river at Lake  
Bigler. A species of *Yucca* - I regard as an instance  
of this - as it was always found amidst drift wood  
and debris - and on shores and islands in the stream.  
Of course this cannot be accepted as a fact - without  
visiting the head of the stream and ascertaining whether  
the plant is common there. The species found along  
the Truckee at one camp, differed very rarely from those  
discovered at another, preserving the same general  
similarity as far as the Big Bend - the limit of research.  
The trees growing near the river - are chiefly cottonwoods  
and shrubby willows of various species. The mass of  
sunberry, is made up of *Shepherdia argentea*, various

Cactus is occasionally met with and various small and always peculiar herbs. The alkali flats I have had but little opportunity to study - as the meanness of water in such places - caused us to hasten out of such localities. I should judge from casual observation that there is but little vegetation in such districts. The mountain cañons where water occurs are rich in vegetation. This is especially so in the W. Humboldt range. The cañons in this range are frequent and the water of good quality and abundant. Aspens, willows, cornels, gooseberry, and "buffaloberry" compose the larger growth of the banks of streams. These shrubs often form a dense thicket. Beautiful flowers are also seen - as aquilegia, gilia (?) solidago and aster - while a climber climbs over the bushes. I give a small sketch of  the plant which I suppose is a gilia  and inclose a specimen. It is a very showy flower. I noticed it early in June on the Sierra and it was still in bloom in Uminville in October. Mosses and Hepaticae were found on rocks in the streams but can hardly be called common. I found at Creana in desert soil and afterwards in Buena Vista cañon near a mountain stream, a species apparently of *Epiphegus* - or nearly related to that genus,

which was probably parasitic although I failed to establish that fact. Mr. Watson thinks he has done so. It has a thick, juicy root - which the Putes stated, was much used by them as an article of food in the month of October. In the higher portions of Wrights and Buena Vista cañons - a species of elder was common - with broad cymes followed by purple berries. It looks exactly like the eastern *Sambucus Canadensis*. The high mountain plants included an *Epilobium*, a *Potentilla* found in the crevices of exposed alpine cliffs - a pretty lupinus with silvery leaves - and a *Castilleja* which is very conspicuous. The *Epilobium* mentioned above is unlike any species I have met with - being very attenuated and delicate. The branches are numerous and form a tight spray and the flowers are small. It is very common. The alpine *Potentilla* was my especial favorite, always choosing the nooks and corners of the wildest cliffs where the air "was delicate" - although perhaps at times boisterous. These bold ridges were objects of real grandeur and showed singular marks of erosion. I took sketches of them all - and would send them were it not for making my letter unduly long. A very remarkable species of dwarf *Spiraea* (?) occurred on the high

mountains above Unionville - tracing the appearance of a moss. It formed large trees, generally on rocks and had spreading-woody stems underlying the mass of leaves. The Juniper and "mountain mahogany" form quite extensive groves on the higher parts of the W. Humboldt range. These two trees afford the necessary fuel for supplying the mining towns. I found several species of eastern seeds at Unionville - and ranunculus, cymbalaria occurred there - and near the Humboldt river. It did not appear to be entirely confined to saline soil. Notwithstanding that occasional tracts of land are fertile - there is much that it would be next to impossible to reclaim. Beasty water - and absence of fuel render some tracts still deserts - and yet these desolate regions with their barren mountains - have a weird beauty - and the varied colors on them, seen through the intervening mist - are lovely. The mountains are a never ending source of delight to me - and Star Peak is really grand. When well I have enjoyed myself very much - and like Mr King and most of the others. I am quite exercised now by reports that come to me through others - that Mr Gardner is very bitter towards me - considers me useless - and wishes to have me sent back. From the fish he has treated me meanly - there is no other word for it - and while at times appearing kind to me personally - has spoken harshly of me behind my back. This is a new thing to me to be considered either "useless" - or unpleasant - and this persons treatment of others - makes me still more firm

narrowed in some places by the near approach of the mountains to the river. They afford much finer hay than similar tracts on the Humboldt where species of salt grass abound. This latter species appears to contain but little nutriment and is generally avoided by stock. There is a "tule" on both these rivers - the roots of which the Indians use for food. The upper portion of the plant is also used as a thatch for houses. The desert plants have a general resemblance to each other - and I cannot say I love them. They are, as a rule, prickly - and with small leaves and more inconspicuous flowers. Their extreme fragility makes them very difficult to preserve. The artemisia is the most respectable - of them all, and often has a very thrifty appearance. In moist localities, particularly near the Humboldt range - it is quite frequently five or six feet in height. The stem and roots are singularly twisted, spirally, like the strands of a rope and are much used for fuel - being employed even at the large smelting works in Oceans - where large quantities of it are consumed. It burns too quickly - but affords a strong heat - and is inexhaustible in quantity. The "grease wood" (?) is common - often in company with the artemisia - but still surviving where that plant declines to be seen - as on the margins of alkali flats.

in my conviction that I am in no way culpable, unless  
it may be in speaking my mind too freely when driven  
to bay by petty persecutions. A dyspeptic's temper is hardly  
ever sweet and mine is no exception. There is no one  
here to whom I can speak of these things - and heretofore  
I have concealed all annoyances and even sufferings  
from my brother. King and Gardner are friends, and  
I can hardly speak to me about the other - although the  
former is a gentleman - and alone would do me justice.

If I am unprofitable for the place, I wish to leave; not to  
stay here from mere sufferance - and constantly un-  
happy. Still, I greatly desire to see, at least the next  
season out. - But not at the risk of underhanding stable  
at my reputation. My work has been small - but my  
illness has been long and weary - and one would sup-  
pose that another who had borne the same disease,  
could account satisfactorily and even kindly for  
my small collection. These little troubles, weigh heav-  
ily upon me - and to have one friend - I would willingly  
let my ambition go. Please excuse me for boring  
you with all this matter. I wish you to hear my side  
of the question fairly and have therefore spoken

at so great length. My kindest regards to Mrs Gray,  
and any of the Forey family you may happen to see.

Your sincere friend  
W. W. Bailey